

**REMARKS**


This Preliminary Amendment presents a Substitute Specification, an amended Abstract, and new claims.

A marked-up version of the Substitute Specification, showing additions to the translation by underlining and deletions from the translation by strikethrough, is attached. The Substitute Specification includes no new matter.

Please charge any deficiency in fees or credit any overpayments to Deposit Account No. 05-1323 (Docket # 095309.57592US).

Respectfully submitted,

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Gary R. Edwards  
Registration No. 31,824

CROWELL & MORING LLP  
Intellectual Property Group  
P.O. Box 14300  
Washington, DC 20044-4300  
Telephone No.: (202) 624-2500  
Facsimile No.: (202) 628-8844  
GRE:aw

2751033

~~Headrest for a vehicle seat~~  
HEADREST FOR A VEHICLE SEAT

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BACKGROUND AND SUMMARY OF THE INVENTION

This application is a National Phase of  
PCT/EP2004/011095, filed October 5, 2004, and claims  
10 the priority of German patent document DE 103 48 939.8,  
filed October 18, 2003, the disclosure of which is  
expressly incorporated by reference herein.

The present invention relates to a headrest for a  
15 vehicle seat, with a stationary support part and an  
impact element which can be moved relative to the  
latter, ~~in accordance with the precharacterizing clause  
of patent claim 1.~~

20 A known headrest of the generic type ~~is known from~~  
disclosed in German patent document DE 102 02 598 A1-  
~~The known headrest is distinguished by~~ has a stationary  
support part and an impact element which can be moved  
relative to the latter. ~~Support part and impact element~~  
25 The two are connected to each other via upper and lower  
levers which form four-bar linkages. ~~The moving of the~~  
impact element can be moved relative to the stationary  
support part ~~takes place via a~~ by pivoting ~~[[of]]~~ the  
levers ~~and therefore via an actuation of~~ so as to  
30 actuate the four-bar linkage. ~~In the case of the known~~  
~~headrest, the~~ Such pivoting of the impact element  
relative to the stationary support part ~~takes place~~  
occurs in two different situations. ~~Firstly~~ First, by  
pulling the impact element forward, ~~[[the]]~~ a desired  
35 comfortable distance for comfort reasons between head  
~~and headrest can be set. For this purpose, a~~ can be set  
between head and headrest. A locking device ~~is~~  
~~provided which~~ locks the four-bar linkages, ~~and thereby~~

keeps the impact element in ~~[[a]]~~ position once it is set. ~~Secondly, a~~ Second, such moving ~~of the impact~~ element can take place ~~when~~ also be induced by a crash, ~~This movement also takes place~~ via the four-bar linkage as described previously. While the adjustment for comfort purposes is carried out manually, the crash-active adjustment ~~takes place with the aid of~~ is performed by a drive unit.

10 ~~[[The]]~~ One object of the present invention is ~~based on~~ the object of providing a provides an improved headrest for a vehicle seat with a stationary support part and an impact element ~~[[which]]~~ that can be moved relative to the latter, ~~which headrest can be produced in a more~~ simple and therefore more cost effective manner.

Another object of the invention is to provide such a headrest which is simple and can be manufactured cost effectively.

20 This object is achieved by the features of patent claim 1.

These and other objects and advantages are achieved by the headrest configuration according to the invention, in which ~~The solution according to the invention is accordingly distinguished in that~~ a lever system provided between the impact element and support part can be at least partially decoupled. ~~This provides the possibility, in comparison to the prior art, of realizing, so that~~ different sequences of movement are possible between the support part and impact element. ~~This affords the advantage that a different sequence of movement can be realized, depending in each case on the~~ reason for which such a movement of the impact element relative to the stationary support part takes place.

[[The]] Such independence of the ~~sequences of~~ movement depending in each case on the triggering reason gives rise to the possibility of setting makes it possible to set each sequence of movement separately, and therefore ~~of providing~~ thus to provide an ideal sequence of movement for each triggering situation. ~~Added to this is the fact that~~ In addition, the provision of two different locking systems ~~can be dispensed with~~ is unnecessary.

10

According to [[an]] one embodiment of the invention, the impact element is mounted on the support part via at least one lower lever and one upper lever. The connection via two levers constitutes a simple lever system which can be ~~designed~~ made sufficiently ~~robustly~~ robust to absorb [[the]] forces acting on the impact element during an accident.

It is ~~conceivable~~ also possible to provide a ~~respective~~ pair of levers at the bottom and top, ~~as a result of~~ which makes the mounting of the movable impact element ~~becomes~~ more stable. The use of pairs of levers therefore supports a robust and therefore reliable mounting of the impact element on the stationary support component. The upper and lower levers can be mounted pivotably in each case both on the stationary support part and on the movable impact element, so that they ~~in each case~~ form a four-bar linkage in each case.

~~According to an~~ In still another embodiment, a hinge point of the four-bar linkage is mounted displaceably. ~~A displaceable mounting of a hinge point of the four-bar linkage results in the possibility of decoupling, so that the four-bar linkage and therefore of realizing~~ can be decoupled, so as to permit different sequences of movement via the same lever arrangement. If the

displaceably mounted hinge point of the four-bar linkage is locked, the sequence of movement is characterized by a pivoting of the levers about the four-bar linkages, so that the movement of the impact element relative to the stationary support part is distinguished by a combination of a pivoting movement with a translation movement. Depending in each case on the arrangement of the levers, the impact element can thereby be displaced forward[[,]] (i.e., toward in the  
10 direction of the vehicle occupant's head), and also downward or upward. When the ~~locking of the~~ displaceably mounted hinge point of the four-bar linkage is ~~canceled~~ unlocked, a different sequence of movement ~~which is different therefrom arises~~, becomes  
15 possible, which is distinguished by [[a]] pivoting of at least one lever with the impact plate about a hinge point. This type of movement makes it possible to set both [[to set]] the distance of the impact element with ~~respect to~~ from a vehicle occupant's head and the  
20 inclination of the impact element.

The displaceably mounted hinge point can be ~~designed as~~ a bolt which is mounted in an elongated hole. ~~In order to realize the possibility of locking the hinge point~~  
25 ~~in the mounting, the bolt,~~ and can be pressed into the elongated hole, so as to lock the hinge point in the mounting. As a result, the elongated hole ~~puts up~~ achieves a defined frictional value against the bolt. In order to adjust the hinge point in the elongated  
30 hole, a minimum force [[has]] must first ~~of all to~~ be overcome. This arrangement ~~affords~~ has the advantage that it can be produced in a simple and material-saving manner. It constitutes a simple possibility of locking a hinge point in a mounting.

35

The different sequences ~~of movement can be realized~~ for moving the impact element in different situations[~~[. For]]~~ include, for example, transfer of the impact element ~~can be transferred~~ from a normal position into  
5 a protective position. ~~When a protective position is spoken of within the context of the invention, this means the position which the impact element assumes~~ in the event of an accident, in order to protect the vehicle occupant against injuries. The protective  
10 position is defined ~~[[here]]~~ in such a manner that it prevents a vehicle occupant's head from swinging back in the event of an accident, and therefore prevents injuries.

15 The transfer from the normal position into the protective position can take place via the four-bar linkage. ~~The pivoting~~ Pivoting via the four-bar linkage ~~affords~~ has the advantage that a reliable and specifically ~~previously determinable~~ predeterminable  
20 displacement of the impact element relative to the stationary support part is possible.

According to a further embodiment, the impact element can be adjusted in its normal position for comfort  
25 reasons. In this case, the adjustment can take place by via the decoupled four-bar linkage. For example, the comfort adjustment can take place via a displacement movement of the displaceably mounted hinge point of the four-bar linkage. ~~In this case, the sequence of~~  
30 ~~movement described in conjunction with claim 5 arises.~~

~~Further advantageous refinements can be gathered from the further subclaims.~~

35 ~~The invention is shown below with reference to the exemplary embodiment which is illustrated in the~~

~~figures, in which:~~

Other objects, advantages and novel features of the present invention will become apparent from the following detailed description of the invention when considered in conjunction with the accompanying drawings.

#### BRIEF DESCRIPTION OF THE DRAWINGS

10

Fig. 1 ~~[[shows]]~~ is a diagrammatic sectional illustration of a headrest according to the invention in a normal position~~[[,]]~~; and

15

Fig. 2 ~~[[shows]]~~ is a diagrammatic sectional illustration according to ~~figure~~ Fig. 1 in a normal position which has been adjusted for comfort purposes.

20

#### DETAILED DESCRIPTION OF THE DRAWINGS

Referring to Figure 1, ~~illustrates~~ a headrest 1. ~~The headrest 1~~ is fastened to a seat (not illustrated) via headrest rods 2. It ~~[[has]]~~ includes a support part 3, which is connected to the headrest rods 2. ~~The support part 3,~~ and has bearing points 4. ~~Furthermore, an impact element 5 is provided. The~~ An impact element 5 comprises a supporting body 6 and a cushion 8 which is connected to the supporting body 6 via connecting webs 7. Bearings 9, 11 for hinge points are likewise provided on the supporting body 6. The impact element 5 is connected to the support part 3 via ~~[[an]]~~ upper lever ~~12~~ and ~~[[a]]~~ lower lever levers 12, 13. The lever 12 extends from the upper bearing 4 on the support part 3 as far as the upper bearing 9 on the impact element 5. The lever 13 extends from the lower bearing 4 on the



support part 3 as far as the lower bearing 11 on the impact element 5. The bearings accommodate rotary joints which may be composed of bolts, for example.

5 Only one upper lever 12 and one lower lever 13 are in each case illustrated in the figures. However, it is also conceivable for a possible to provide respective pair of levers to be provided at the top and bottom. Only the levers 12 and 13 which are illustrated are  
10 described below.

The lower bearing 11 on the impact element 5 is distinguished in that it is provided in the form of an elongated hole. A bolt 15, which forms forming the  
15 lower joint of the lower lever 13 is mounted in [[this]] the elongated hole. By means of this elongated hole, so that it is possible to displace the bolt 15 in the bearing 11, i.e., relative to the impact element 5. The remaining hinge points in the bearings 4 and 9 are  
20 designed as a fixed position[. The]; that is, bolts forming the hinge points are not mounted displaceably.

The functioning operation of the headrest according to the invention will be described in more detail below:

25 ~~Owing to the~~ By decoupling according to the invention of the lever system 12, 13 connecting the stationary support part 3 and the movable impact element 5, the movable impact element 5 can carry out different  
30 sequences of movement. One sequence of movement is carried out if a vehicle occupant adjusts the headrest for comfort reasons. Another ~~sequence of movement~~ is carried out if the headrest 1 is transferred from its normal position into a protective position in the event  
35 of an accident.



~~The adjustment for comfort purposes is described first of all below.~~ If a vehicle occupant ~~would like~~ wishes to adjust the impact element 5 for comfort reasons, he or she can do ~~[[this]]~~ so by applying a force in the direction of the arrow A in figure 1. This ~~application of force has the result that~~ force causes the impact element 5 ~~is rotated~~ to rotate by the upper lever 12 about the upper hinge point 4 on the stationary support part 3. The maximum adjustment distance of a rotational movement of this type is predetermined by the length of the elongated hole 11. In the exemplary embodiment illustrated, the maximum angle of adjustment corresponds to the angle  $\alpha$  shown.

The comfort adjustment ~~[[is]]~~ thus provides an inclination ~~adjustment of the impact elements,~~ which proceeds from a pivoting about the pivot point 4 of the upper lever 12. For this purpose, the elongated hole 11 is of curved design and has a radius corresponding to the distance from the upper pivot point 4. The bolt 15 is preferably pressed into the elongated hole 11, ~~as a result of which~~ so that a defined frictional ~~[[value]]~~ force is ~~put up against~~ exerted which opposes a movement of the bolt 15 in the elongated hole 1, ~~said.~~ Such frictional value ~~enabling~~ enables the impact element 5 to be locked in any position, and therefore ~~enabling~~ enables an infinitely variable setting of the impact element 5. Of course, any other form of locking the impact element 5 relative to the lower lever 13 is also conceivable. The elongated hole 11 may also be of profiled design, or its walls may be of contoured design, so that a stepwise or latched adjustment is ~~[[made]]~~ possible. The adjustment for comfort purposes may also take place with the aid of a drive, for example an electric motor.

In the event of a crash, ~~the displacement of~~ the impact element 5 ~~takes place, as~~ is displaced in a manner that is known from the prior art, by simultaneous pivoting of the levers 12, 13 about the hinge points 4. In this case, the impact element 5 pivots forward or upward. ~~The pivoting can take place,~~ independently of ~~[[the]]~~ an inclination which has been set for the impact element 5. A ~~eustomary~~ conventional locking is also provided for this use situation. The drive used may be, for example, a prestressed spring.

The foregoing disclosure has been set forth merely to illustrate the invention and is not intended to be limiting. Since modifications of the disclosed  
embodiments incorporating the spirit and substance of the invention may occur to persons skilled in the art, the invention should be construed to include everything within the scope of the appended claims and equivalents thereof.